5by5 Networks

NGCC v1.0

Product Requirements Document

v 08

August 5, 2003

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Introduction

1.1 Purpose

The purpose of this PRD is to document the product and release requirements for the Next Generation Contact Center (NGCC) v1.0 project. It is the primary reference document for other project documents such as the Functional Specification, Test Plan and Beta test plan.

1.2 Executive Summary

NGCC 1.0 is a distributed contact center product that leverages existing TDM infrastructure investment and provides call center operators the following operational advantages:

- Processing of multiple media interactions in a unified contact center model
- Multimedia IVR - automated handling of interactions to reduce human intervention
- Universal queuing for call distribution to remote locations around the world
- Collection and storage of Agent web activity for detailed analysis

Additionally NGCC plans on leveraging powerful technologies and bringing them into the Call Center environment: VoIP (Voice over Internet Protocol), OLAP (OnLine Analytical Processing) reporting, and the Instant Messaging paradigm for presence are a few of the key technologies being leveraged. The product will be leading edge, built on top of Microsoft RTC server (real-time communications).

2 Target Operating Environment

NGCC is designed to enhance the service within a single call center or to allow for enhanced functionality between multiple call centers. NGCC requires various hardware and software pre-requisites in order to operate. The following table outlines the target call center environment that is supported by NGCC 1.0. The release shall be tested against this target environment and it can be assumed that the product may not function correctly if used in a different operating environment.

2.1 Definitions

For purposes of this requirements document, the following terms are defined:-

Administrator	The customer staff personnel responsible for installation, management and maintenance of the NGCC system
Agent Application	Automated contact centers use computers with either PCs or terminals at each agent seat. The software used by the agents is referred to in this document as the agent application. It is either custom software written specifically for the contact center or a software product that has been configured for the contact center's own application needs.
Call Center Operator (CCO)	The organization that runs the contact center and is the owner of the NGCC system.
Customer	The human being that is participating in the real time interaction (such as a telephone call) and is a customer of the outsourcer (see below)
Enterprise	The organization that has engaged the CCO to service support calls from its customer base. Note that CCOs can support multiple Enterprises.
SBR	Skills Based Routing. Routing rules are determined based on skills that are specified by the supervisor for the agent. Skills can be an expertise such as language, product familiarity and can have "weights" associated with them to signify the agents proficiency.
SLA	Service Level Agreement. Outsourcing vendors have requirements with their customers, the Enterprises using their services. This agreement specifies the response times of the agents, the uptime and reliability in general, etc.
URI	Uniform Resource Identifier. A URI is the way you identify a point of content on the Internet. The most common form of URI is the Web page address, which is a particular form or subset of URI called a URL. A URI can also specify a file on a local machine.

2.2 Contact Center Technology

The product has been designed to work in a contact center with the following technology base:

Call Center PBX	
Manufacturer	- Nortel meridian 1 - Avaya G3 - Siemens TBD - NEC TBD - Potentially Cisco depending on market demand
Local PSTN Connection	All local variations as required by the market
IVR Platform	- Windows based IVR platform with following capabilities - Invoke customized C or C++ functions - Send IVR phone call data to above mentioned functions - Aware of what line a particular phone call is on and able to send this to above mentioned functions
CTI Link OAI for NEC	- CTI link that is supported by Intel Netmerge 1.0 (see http://www.intel.com/network/csp/products/ctconnect/switch.htm) OR *NEC CTI LINK TBD* - Ability to transfer calls on IVR lines under host control without IVR supervision
Links to remote Contact Centers	- TIE trunks connected between the contact center PBX's terminated on Cisco AS5350 media gateways. - PBX's configured with unified numbering plan or Trunk/Acess Code numbering plan for transfer of local calls on lines connected to IVR or Agent telephones. - Cisco gateways connected via dedicated links, each with constant and known bandwidth and service level.
Customer Management App	- Enterprise Application Software with Web Services interface available to contact center agents' PC. - Ability to provide data access via Web Services

2.3 Agent Desktop

The system requires the following equipment at the Agent work area:

Computer	Running Windows 2000 or greater
	Connected to corporate network for access to Enterprise Application and other back office systems

	Internet Explorer 6.0 or greater
	40 MB of free disk space
	No floppy disk drive required
Agent Telephony device	
	Digital phone set that can be monitored from a CTI link on the PBX or
	Headset / Speaker and Microphone on agent PC

2.4 Configurations Supported

The system shall support the following configurations:

2.4.1 Single Location Contact Center

- PBX connected to PSTN for incoming calls
- NGCC Server running on central computing platform
- Computing platform connected to PBX via line side T1 connection
- Computing platform connected to PBX via CTI line. Link must be supported by CT-Connect
- PBX configured to send designated incoming calls to above T1 lines.
- Agent phones connected to PBX. Phones can be monitored and controlled by CTI link
- IP network connecting NGCC Server platform, agent computers and Enterprise Application software system
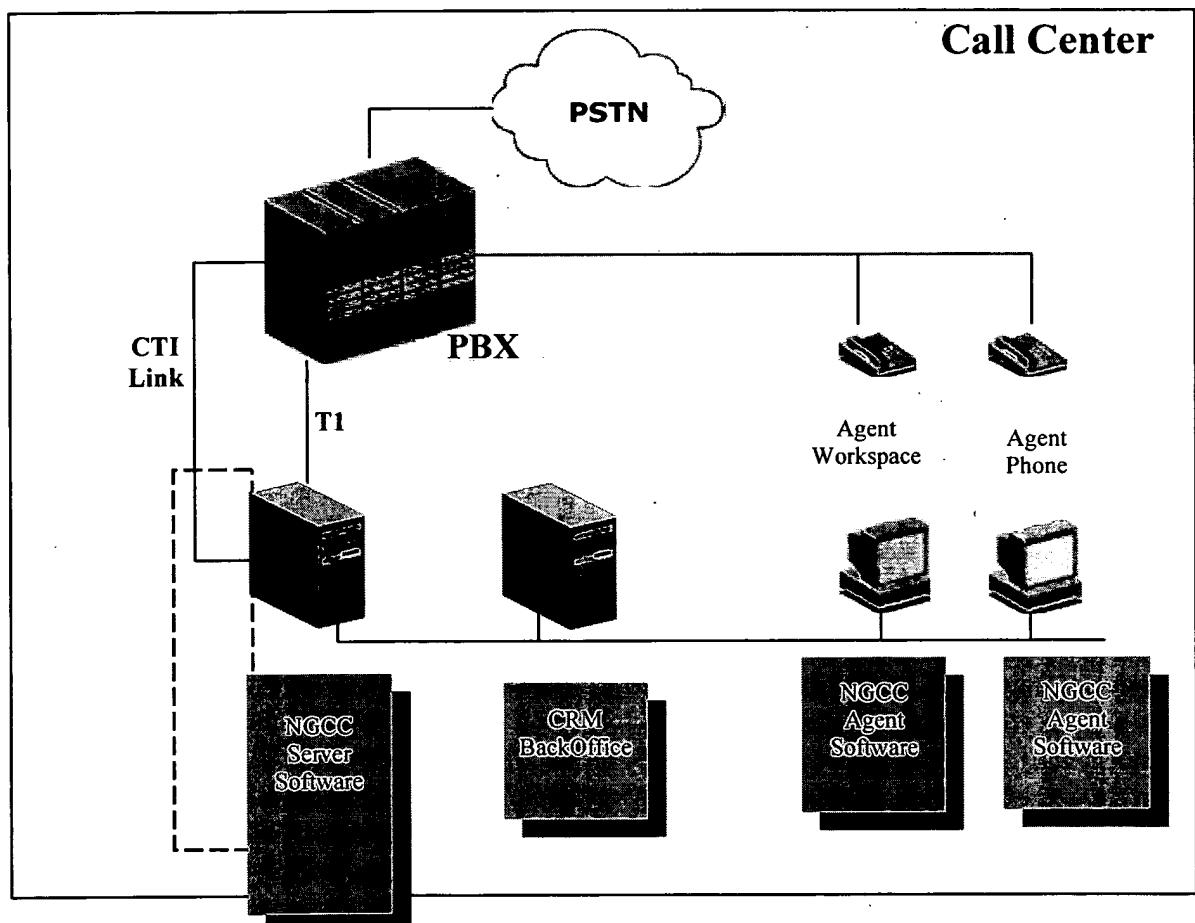
2.4.2 Networked Call Centers

- Two or more contact centers equipped as defined in 'Single Location Contact Center' defined above.
- Leased TIE lines between each contact center PBX and remote contact center PBX to allow for transfer if voice calls from line side T1 ports and agent desktop phones.
- Data connectivity between contact centers implemented on VPN connection.
- Leased connection between local contact center IP network and remote contact center for managed (defined SLA) IP connectivity between contact centers.
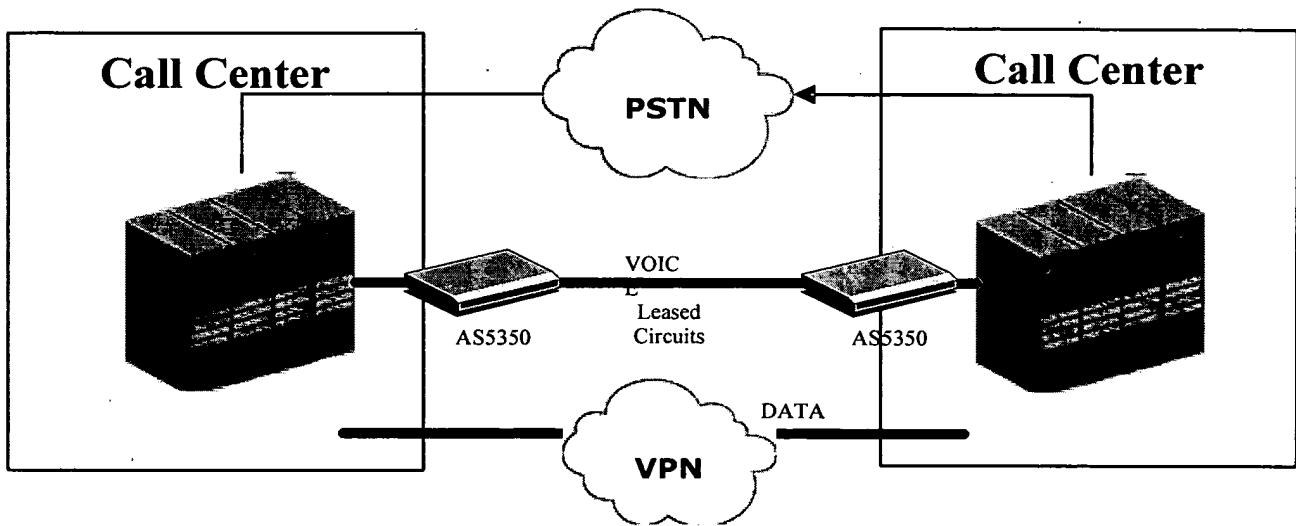
2.5 Multi-tenant

[R-1] Ability to construct multiple IVR and ACD instances, and interface with partitioned databases (different partitions for each separate Enterprise), thereby providing the Outsourcer the capability of supporting multiple Enterprises from a single NGCC system, and from a single database and/or Enterprise Application system.

3 Detailed Requirements

3.1 Organizations

[R-2] The system shall have the ability to define Service Level Agreements (SLA) at the enterprise level:

    a. The SLA is associated with a contact center or group of contact centers

    b. SLA will contain metrics such as:

        i.   Guaranteed production time per time period (day, half hour etc.)

        ii. Rate per production time

        iii. Average time per call during a period

        iv. Customer attrition rate

        v.   95% of calls answered within 30 seconds, or similar types of metrics

[R-3] The system shall have ability to define business processes associated with the enterprise

[R-4] The system shall have the ability to define the business domain skills under each of the business processes, as well as separate enterprise expertise.

[R-5] The system shall have ability to assign business processes to a contact center

[R-6] The system shall have the ability to define the skill sets at contact center level

[R-7] The system shall have the ability to map business processes to the skill sets of contact centers. The skill sets of contact centers shall be linked to agents, who have those skills.

[R-8] The system shall have the ability to set up skills based and other routing rules at enterprise level / call center level

[R-9] The system shall have the ability to specify the time splits in a day at contact center level or business process level for repots purposes

3.2 User configuration

[R-10] The system shall have the option to create a new user via a graphical user interface (GUI) client. The user shall be created in the database and or in a directory server with this easy-to-use interface.

[R-11] The system shall have the ability to define various roles at various levels of the organization

[R-12] The system shall have the ability to assign roles to the persons belonging to different organizations

[R-13] All the users created are part of the RTC presence manager

[R-14] The system should support global user preferences (Locale, Language, date & time formats and Currency formats)

3.3 Installation

While there's a myriad of ways to approach this, here is the approach chosen:

[R-15]   *Web Installation.* An Enterprise Web Server shall contain a link to the agent application, whereby the Customer instantiates the client application by clicking on the link, or retrieves the updated version using the same procedure. The client or update is automatically installed on the local machine.

[R-16]   The notification of the update shall be similar to how the Windows XP update agent currently notifies a user when an update is available, and lets the user select when to download the update files and also when to install.

3.4 User Roles & Permissions

[R-17]   The system shall have ability to define various roles at each of the organizational nodes. The roles may be defined at the time of implementation, here are some sample roles:
   a. Administrators
   b. Enterprise managers
   c. Call center managers
   d. Supervisors
   e. Agents
   f. The system shall have one role as the Chief Administrator for each of the installations. The Chief Administrator shall have the permissions to set up the system from scratch, and this privilege will be restricted to only the person designated as the Chief Administrator.

[R-18]   Each person of the call center may have one or more roles as defined above.

[R-19]   Within a contact center, the system shall implement a hierarchy of work relationships as follows:
   a. Agents work for one supervisor. This supervisor may have a long term relationship with the agents or the relationship may be shift specific.
   b. A manager may have many supervisors reporting to him. And some managers may have other managers reporting to them.
   c. Administrator may have access to many supervisor areas, for any system related set up activities, etc.
   d. One person may have many roles of supervisor, manager and / or administrator.

[R-20]   The system shall implement role based security. For each role, the system administrator can specify what operations the users with that role can perform. The depth of the access depends on the organization node at which the user is associated with. This form of security access is essential for every call center.

[R-21]   The system shall have an option to specify the user access restrictions either for specific node or all nodes below the user node at a particular level.

[R-22]   All users shall have a user name and a password.

[R-23]   The system shall allow for integration to corporate directory services via LDAP or another automated system

[R-24]   System users shall be required to log on before they can use the system. Users shall be authenticated against NGCC database or active directory server, or Microsoft Passport Services.

[R-25]   At time of user sign on the user shall be able to set up options, such as the phone number in the cubicle they are in.

3.5 Person (Agent/Supervisor) Configuration

[R-26]   The system shall have the ability to store various attributes of the person, as supported in IM Paradigm. These attributes shall be extendable through the concept of flex fields (We may provide up to 10 flex fields).

[R-27]   The system shall support, the following concepts:

    a.   The persons are employed by a contact center, the employment relationship shall be maintained.

    b.   Persons are allocated to perform a particular role with a contact center. Persons may be associated with many contact centers with a role(s).

[R-28]   The list of skill sets are defined at the contact center. The agents are mapped to the various skills of the contact center:

    a.   Skill sets may be codified for standard usage across the system

    b.   The list of skills should be configurable on a system wide basis by the system administrator

    c.   Agent skills can be weighted to allow for description of various levels of skill for particular attributes.

[R-29]   Agents will be assigned groups for common management:

    a.   Agent groups can span multiple call centers

    b.   Each agent may belong to one or more groups

    c.   Each group may have a supervisor

    a.   Each group may be classified to handle various levels of support

[R-30]   Agents languages may be captured and used for SBR (skills based routing)

[R-31]   Agents or agent groups may be assigned to handle contact initiations from a category of customers

[R-32]   The contact center shall have a list of channels (i.e., phone, SIP phone, IM, email) it supports, with a minimum and maximum instances per work station.

[R-33]   The persons are assigned to use different channels, based on their capabilities. The persons may have different identity for each of the channels.

[R-34]   The repository of work stations (Cubes) available in each contact center shall be defined. The capabilities at each of the work station to use the different channels of contact center shall be defined.

[R-35]   Persons shall log on to the work station. The logged on person's access to the channels shall be dependent on person's channel capabilities and the work station channel handling capabilities.

[R-36]   Person's usage of the workstation is logged and monitored.

3.6 Multiple Interaction Channels

[R-37]   System shall support a multi-channel application. First version of the system shall support PBX voice channels only.

[R-38]   For each channel, the system shall support multi-vendor connectivity.

[R-39]   For the PBX voice channel, a list of supported PBXs in the first version can be found in section 2.1.

[R-40]   For the PBX voice channel, the following IVRs are supported out of the box in the first version:

      a. HeyVoice IVR

3.7 Universal Queue

[R-41]   Interface with channel adapters to service customer requests. The following information is required to be sent to the Universal Queue Engine (UQE):

      a. channel requested

      b. source channel URI identifying source device

      c. customer ID

      d. skill set required

      e. language required

      f. script

[R-42]   Retrieve the customer profile by looking up the following information from the system database:

      a. customer category

      b. service agreement

      c. dedicated agent/last agent for service

[R-43]   Provide a graphical user interface to define SBR rules

[R-44]   Do not route request to any contact centers that do not meet the minimum criteria specified in a system wide location SBR rule, which is defined by using the following attributes:

      a. contact center location dynamic attributes

          i. bandwidth capacity available/remaining

          ii. percentage of log-on agents that are idle

          iii. production minutes remaining

[R-45]   Provide interface to change system wide location routing rule at run time

[R-46]   Select the most suitable agent according the predefined agent selection rules:

      a. Agent selection rules are defined by using the following attributes:

          i. agent static attributes

             1. skill sets

             2. language

        3. support level

        4. Enterprise

    ii. Agent dynamic attributes

        1. availability

        2. idle time

        3. average number of calls serviced today

    iii. contact center location static attributes

        1. telecom cost

b. The deciding factor for which agent selection rule to apply is decided by a combination of the following:

    i. customer category

    ii. service agreement

    iii. time of day, day of week.

c. For each rule, a list of "must have" attributes", and "weighted attributes" are specified. Agent satisfying a rule shall possess all the "must have" attributes. The weighted attributes provide a score for agents who satisfy the "must have" attributes. The agent with the highest score is selected to service the customer request. If more than one agent results in the same score, a choice shall be made by alphabetical order.

[R-47] Request a Web Page URI from the Enterprise Application to be sent to agent application

[R-48] Notify selected agent's application of pending customer request by sending the Enterprise Application web page URI

[R-49] After acknowledgement from the agent application, send the agent's contact information for the requested channel to the channel adapter, which establishes connection between customer and agent device.

[R-50] Reroute customer request to another suitable agent if original selected agent does not actively choose to receive customer request, after the customer request has been presented to agent application, within a configurable time period.

[R-51] Queue the customer request for the next suitable agent if no resource is immediately available.

[R-52] Optionally queue the customer for a callback. Here the customer shall maintain their position in the queue and be called back when it's their turn.

[R-53] Provide estimated wait time to channel adapters.

[R-54] Interface with the Bandwidth Adapter to allocate bandwidth for call transfers

[R-55] Service agent application for transfer requests.

[R-56] Service agent application for conference requests.

[R-57] Collect real-time activity and status information for call center management.

[R-58] Collect historical activity data on call traffic, caller behavior and agent performance for evaluation and planning purposes.

3.8 Adapter *Application Programming Interface (API)*

[R-59]   The Channel adapter is responsible for the following:

    a. Establish and maintain a connection to a specific contact channel to receive incoming requests

    b. Obtain relevant information for incoming requests such as customer ID and specific problem area information; collected information is passed to the Universal Queue Manager for agent selection

    c. Receives agent target device information (e.g., phone number) from the Universal Queue Manager and routes request from source system to target device.

There is a set of channel adapter API for the channel adapters to interface with the Universal Queue Manager.

    a. *SubmitRequest* — this method is used for the channel adapter to request an agent assignment for a customer from the Universal Queue Manager that matches the given agent attributes.

    b. *RequestStatus* — this method is used for the channel adapter to request the current status, such as the estimated wait time of the customer request submitted to the Universal Queue Manager.

    c. *CancelRequest* — this method is used for the channel adapter to cancel the customer request submitted to the Universal Queue Manager.

    d. *Transfer* — this method is used for the Universal Queue Manager to instruct the channel adapter to transfer the source channel to the destination channel, in order to connect the customer and the agent.

    e. *Conference* – this method is used for the Universal Queue Manager to instruct the channel adapter to conference a third party to an existing session between customer and the agent.

[R-60]   The Presence Adapter monitors the presence of channel devices and updates the Universal Queue Manager of device presence changes. There is a set of presence adapter APIs for interfacing with the Universal Queue Manager:

    a. *EnablePresence* — this method is used for the Universal Queue Manager to instruct the presence adapter to begin monitoring presence for the supplied channel.

    b. *DisablePresence* — this method is used for the Universal Queue Manager to instruct the presence adapter to stop monitoring presence for the supplied channel.

    c. *SetPresence* — this method is used for the presence adapter to send a message to the Presence Manager whenever the presence state of a monitored channel changes.

[R-61] The Bandwidth Adapter provides Network Bandwidth configuration and usage information for voice and data traffic to the Universal Queue Manager (UQM). There is a set of bandwidth adapter API functions for interfacing with the Universal Queue Manager.

    a. TBD

3.9 Agent Application

3.9.1 General

[R-62]   The Agent application shall run on windows 2000 or later PC's sitting in the agents desktop

[R-63]   The Agent application shall detect if local software is out of date and needs to be updated. It shall automatically update its local software after prompting the agent

[R-64]   The Agent shall be prompted for a valid User ID and password before the Agent application becomes operative

[R-65]   The Agent application shall consist of four sections: Presence Display, Reader Board Display, Media Control Window and Business Application Window.

[R-66]   The Agent application shall maintain a current status. This status can be set by the agent or by the UQM.

[R-67]   There shall be only one Presence Display and one Reader Board Display on an Agent's PC. These shall be grouped together into a vertically oriented window that can be docked to the left or right side of the agent PC screen.

[R-68]   Each interaction with an external customer shall be known as an interaction session. For each interaction session, the Media Control Window and a Business Application Window shall be started. When the session is ended, the corresponding child windows shall be closed

3.9.2 Configuration

[R-69]   The Agent application configuration is composed of two parts - Agent specific settings and location specific settings.

[R-70]   The system shall automatically determine the Seat (location-based configuration, phone numbers, SIP endpoints etc) without asking the agent for this information unless absolutely necessary.

[R-71]   The Agent application configuration is stored centrally in the system database

[R-72]   The system shall provide an interface for managing the Agent application's interface configuration

3.9.3 Presence Display

[R-73]   The presence display shall contain a list of colleagues that are currently logged onto the system.

[R-74]   Each line in the colleagues list shall display agent static attributes.

[R-75]   The static agent attributes that should be displayed shall be configurable by a supervisor (SCOPE).

[R-76]   Colleagues shall be distinguished by type using different icons to denote contact center role (Agent, Supervisor, Admin)

[R-77]   The colleagues list shall display dynamic availability information in the following manner:

[R-78]   If a colleague is contained within a list, it always implies that they are logged onto the system.

[R-79]   If a colleague entry is grayed out, it means that they are busy (engaged in a customer session or away from desk)

[R-80]   If the colleague entry is bold, it means that they are at their desk and not engaged in ANY session and hence are available.

[R-81]   Right clicking on colleague entry shall show complete static profile of the agent

[R-82]   The agent can indicate that they are busy by selecting from a list of predefined busy states (i.e., "away from desk", "out for lunch", etc.). An agent can do this ONLY when they have no active customer sessions on their PC.

[R-83]   The list of predefined busy states shall be configurable by a Supervisor (SCOPE).

[R-84]   When an agent has set their state to busy, a very visible reminder shall be displayed so that they do not forget to set their state to available when appropriate.

3.9.4   Reader Board Display

[R-85]   The Reader Board display shall provide visual representation of messages sent from the UQM These messages shall be of two types: statistical messages and session initiation requests

[R-86]   Statistical messages shall be displayed as plain text on a scrollable sub window of the Reader Board display.

[R-87]   The length of the scrolling window of the Reader Board display shall be configurable by a supervisor (SCOPE).

[R-88]   The Statistical messages to be delivered can be configured by the agent.

[R-89]   The agent can select one or more message types from a list of message types. The list of message types is configurable by a supervisor (SCOPE). Also, the method for generating these messages is configurable by a supervisor (SCOPE).

[R-90]   For each message type selected, the agent should be able to select the type of trigger that shall generate the message. Trigger types shall include:

      [R-91]   A timer with definable number of seconds (that is, the message shall be sent every n seconds)

      [R-92]   Session completion with definable number of sessions to skip (that is, the message shall be sent after the completion of every n customer interaction session)

      [R-93]   Threshold is reached with a definable number to indicate the threshold (that is, the message shall be sent when a certain statistic goes above or below n).

3.9.5   Consultation

[R-94]   The interface shall support a consultation feature to allow the agent to interact with colleagues via the native IM session capabilities of the system. This feature shall be independent of the supported media channels for communicating with customers.

[R-95]   The agent may initiate a consultation by double-clicking on the appropriate colleague entry on the Presence Display. The consultation shall not start until the target colleague has accepted the invitation.

[R-96]   The target agent shall be provided with a display indicating that the originating agent is requesting a consultation.

[R-97]   The target agent may explicitly reject the invitation in which case the originating agent is informed and the consultation is cancelled.

[R-98]   The target agent may not explicitly accept the invitation for a pre-defined number of seconds (consultation timeout value), in which case the originating agent is informed and the consultation is cancelled.

[R-99]   The predefined consultation timeout value is configurable by a supervisor (SCOPE).

[R-100] Once the target agent explicitly accepts the invitation before the lapse of the consultation timeout value, the originating agent is informed and the consultation is initiated.

[R-101] Once the consultation session has been initiated, the agent panel may put all active media sessions on hold if configured to do so. This is configurable by a supervisor (SCOPE).

[R-102] Agent can chose whether to consult with IM (default) or VoIP (using PC speakers and a microphone) – (LIMITATIONS AND CONFIGURATIONS REQUIRED)

[R-103] Agents can also ask the UQE for assistance in finding an agent for consultation. The originating agent should enter the list of skill sets required and minimum proficiency in each skill set.

[R-104] The UQE shall return an agent to consult with. The UQE shall not limit its search to the agents within the colleagues list.

[R-105] During the consultation, both parties shall be able to see the desktop of the originating agent and collaborate (white boarding).

3.9.6 Screen Pop

[R-106] The UQE shall deliver media sessions as well as information about these incoming media sessions (Call Data) to the agent application BEFORE the session is initiated.

[R-107] The interface shall provide the ability to send Call Data to other desktop applications using DDE, VB script and invocation of command line programs.

[R-108] When an incoming media session is ready for delivery to the agent, the agent application shall display a very visible UI object (*Accept Button*) on the Reader Board window to attract attension.

[R-109] When the agent activates the *Accept Button*, the incoming media session shall be initiated (See Incoming Media Sessions below for details).

[R-110] If the agent does not activate the *Accept Button* before a predefined number of seconds (Preview Interval), the agent application shall automatically activate the *Accept Button* if their preferences are configured to do so (Auto Accept).

[R-111] The Auto Accept feature and the Preview Interval shall be configurable by a supervisor (SCOPE) for each of the Agents.

[R-112] If the Auto Accept feature is not configured and the agent does not accept the call within the Preview Interval, the UQE shall route the call to another agent and then advise the Agent application to set the previous Agent's presence status to BUSY for a small timed interval before attempting again. This interval shall be configurable by the system administrator.

3.9.7 Desktop Integration API

[R-113] The Agent application shall provide an API that allows other agent pc applications to be integrated to the system. This API shall have the following abilities:

    [R-114] A function that shall allow other applications to 'register' with the Agent application. Once registered, the other applications shall receive events from the Agent application and shall be able to perform some functions in response.

    [R-115] A registered application shall receive an event when an incoming media session is: pending (ALERTING Message). The application shall be provided with the call data associated with the incoming session,

    [R-116] accepted (CONNECT Message). The application shall be provided with the call data associated with the incoming session,

    [R-117] about to be transferred. (TRANSFER Pending). The application shall be provided with the call data associated with the incoming session and shall be able to update or add to this call data. This shall allow applications to capture any transactions completed while the previous agent was interacting with the customer.

    [R-118] terminated. (COMPLETED).

3.9.8 Incoming Media Sessions

[R-119] When a new incoming media session is initiated, the agent application shall open a new Media Control Window and Business Application window linked together

[R-120] The Business Application window shall contain the business application used by the Agent for data management.

[R-121] The Media Control Window shall be linked to the Business Application Window. That is, the Media Control Window and the Business Application Window should be managed as a single window.

[R-122] The Media Control Window shall display the third party information and time spent so in the session as summary information

[R-123] The Media Control Window shall provide window elements that provide the following functionality. Button controls may not necessarily be used.

    [R-124] *End Button* – End the media session but do not dismiss the window (see wrap)

    [R-125] *Hold* - Suspend the session

    [R-126] *Transfer* - Transfer the session, including the other party, to a colleague

    [R-127] *Conference* – Add a colleague to the existing session.

    [R-128] *Wrap* – If the media session is still in progress, invoke the End button functionality. Then, allow the agent to select a disposition code that describes the media session and then dismiss the window.

        a. The list of disposition codes should be configurable by a supervisor (SCOPE). The code selected should be saved for generation of reports later.

3.10 Supervisor Application

[R-129]   The supervisor application shall be a web-based User Interface/Application

[R-130]   Shall have the ability to setup additional agents in the group

[R-131]   Shall have the ability to update the agent skills and change the allocation rules dynamically to reduce the queue length

[R-132]   Shall have the ability to update agent profile in the group(s)

[R-133]   Shall have the ability to set up specific agents desk top settings

[R-134]   The supervisor shall have an IM interface showing the groups, list of agents under each group along with current status. When double clicked on the agent, shall show the detailed dashboard for the agent.

[R-135]   Shall have a dashboard agent-wise productivity (time spent on call and the wrap-up) / Total available time. When clicking on an agent name, shall show the details for that agent

[R-136]   Shall have an Agent dashboard which shall give agent-wise, channel-wise statistics :

    a.   Number of contacts attended to

    b.   Average time spent per contact

    c.   Average wrap up time per contact

    d.   Average response time per each contact

    e.   Agent productivity (Time spent on call + Wrap up) / Total available time.

[R-137]   Shall have a dashboard showing the basic statistics by group:

    a.   Number of contact instances attended so far

    b.   Number of contact instances waiting for agent allocation (aggregate for the skill sets for the group)

    c.   The wait time for contact instance (min, max, average)

    d.   Number of agents on call versus the total number of agents logged into the system

[R-138]   Shall have a dashboard of time split statistics:

    a.   Number of contact instances

    b.   Average time on call

    c.   Average wait time, Max wait time

[R-139]   Shall have ability to initiate an IM message to a particular agent.

[R-140]   Shall have the ability to "eve's drop" on an existing call

[R-141]   Shall have the ability to specify the personal alerts based on predefined events, along with threshold and the preferred mode of delivery (email, pager, cell phone, IM, etc.). Some of the events are:

    a.   Number of calls in the Queue

    b.   Average talk time per call

    c.   Number of dropped calls

    d.   Number of calls redirected by UQE, due to agents not accepting the calls

3.11   Reporting

[R-142]   Web-based report generator that allows an administrator to run reports via a web-browser

[R-143]   The system shall use OnLine Analytical Processing (OLAP) based technologies for providing flexible dashboard-based reports for convenient analysis.

[R-144]   The system shall ship with pre-built OLAP Cubes with GUI tools.[1]

[R-145]   Reporting shall have three distinct groups:

    a.   Dashboards based on real time data

    b.   Reports/views based on historical data

    c.   Alerts/notifications based on preset thresholds

[R-146]   Dashboard based on real time data:

    a.   Current Status – This dashboard data is computed at the node level to which the logged in person has access.

        i.   Average time per contact by channel

        ii.   Average call wrap up time

        iii.   Average time to answer/respond (Time taken to reach the agent)

        iv.   Number of calls in the Queue by skills group

        v.   Number of Agents engaged versus total strength

    b.   Agent status summary – Shall show the number of agents in each of the defined status states. When clicked on, the status shall navigate to the status details chart.

    c.   Status details – Shall show the individual agents who are in that defined status state and how long they have been in that state, and the average time spent in that state during the past week, month, quarter, YTD.

    d.   Dashboard on time split –

        i.   Total number of calls in the time split

        ii.   Average time spent on the call in the time split

        iii.   Percentage of Agents on call during the time split

        iv.   Average time spent in queue

    e.   Dashboard on the SLA compliance. The minimum supported SLA metrics at the contact center level consists of:

        i.   Total production minutes (the total time spent on a call)

        ii.   Committed production minutes per time split

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[1] This will require the customer using the OLAP features to have MS Excel installed in their machine.

      iii.   Average time spent in the Queue

      iv.   Maximum time spent in the Queue

      v.   First time call closures

      vi.   Customer attrition

      vii.   Agent attrition

[R-147] Agent performance report by time period (week, month, quarter, year):

a. Number of calls handled

b. Average talk time per call

c. Average wrap up time per call

d. Average speed of answering a call (time taken to pick up the call from the time it was routed to him/her)

e. Number of calls redirected by UQE

f. Number of redirected calls attended

g. Number of calls redirected from not being accepted

h. Number of calls transferred to others

i. Number of calls transferred by others

j. Number of first time call closures

k. Number of customer preferred agent calls handled

l. Number of consultation with the supervisor

[R-148] Agent group performance and Call Center performance reports by time period (by time split for day, week, month, quarter, year):

a. Number of calls handled

b. Average talk time per call

c. Average wrap up time per call

d. Average speed of answering a call(average time spent in Queue)

[R-149] System performance report statistics per time split for the past periods (week, month, quarter, YTD):

a. By Call center (aggregate of all the call centers below the selected center):

      i.   Calls accepted

      ii.   Calls abandoned

      iii.   Calls answered

[R-150] Delayed or queued call report:

a. Number of calls delayed over a 5 sec bucket up to a maximum queue time versus the number of calls dropped at each of the specified time intervals.

[R-151] Performance trends by period (day to day, month to month, quarter to quarter) for Agent, Group, call center, business process:

a. Number of calls handled

b. Average time spent per call

c. Average time spent in queue

d. Abandoned calls

e. Average wrap up time

f. Number of first time call closures

g. Customer attrition

h. Agent attrition

[R-152] Real time alerts:

a. The system shall provide ability to setup and send real-time alerts based on certain specified events reaching a defined threshold. The system shall provide the ability for the user to specify the preferred mode of receiving the alerts for each of these events.

b. The supported events are:

    i. Number of calls in the Queue

    ii. The maximum length of time spent in Queue

    iii. Number of agents not attending to calls

    iv. Average talk time

    v. Average wrap up time

c. The modes of alerts supported

    i. Dashboard

    ii. Email

    iii. Pager

    iv. Cell phone

[R-153] SLA reporting. The system shall provide reports for SLA compliance at contact center level over a time period. The metrics included are:

a. Total production minutes

b. Committed production minutes per time split

c. Average time spent in queue

d. Maximum time spent in queue

e. First time call closures

f. Customer attrition

g. Agent attrition

3.12 Application interaction interfaces

[R-154] The system shall have the following interfaces:

    a. Web-based GUI for online interactions, with full support for customization/localization of the application

    b. Web services interface for interchange of data between NGCC and other systems

    c. COM interfaces for integration with other MS Windows based systems

[R-155] The system shall have the capability for customizing the user interface to match with the installation preferences, in the following areas:

    a. The look and feel of the pages may be changed/controlled through cascading style sheets (CSS)

    b. The logged on user's language/date format may be customized based on the user's preferences

[R-156] The system shall have a built-in Portal interface.

[R-157] The system shall support the database specific character set for data handling/manipulation (Unicode, US Eng, European set). The choice is based on the end customer's requirement.

3.13 Monitoring

[R-158] The system shall provide administrators & supervisors the ability to define statistics that shall be collected and maintained in real-time.

[R-159] The Administrator will be able to send these statistics to:

    a. Log files for historical reporting of Contact Center performance

    b. Agent desktops for positive feedback

    c. Dynamic web pages that can be monitored by web browsers

[R-160] The supervisor/administrator will be able to monitor a voice or IM interaction locally or remotely, effectively listening to the conversation between the agent and the customer, and view the data the agent is also reviewing simultaneously.

[R-161] The system shall be able to record voice or IM interactions for later review. The files can be saved in MP3 or WMA formats

[R-162] The system shall record all agent web page transactions for later review

3.14 Operation, Administration & Maintenance

[R-163] The system shall provide a GUI application tool for remote configuration and management tasks – The Integrated Management Console (IMC)

[R-164] The IMC shall provide access to commonly used tasks via a graphical toolbar

[R-165] IMC shall allow for the configuration of the following Universal Queue features

[R-166] IMC shall allow for the configuration of IAE

[R-167]   IMC shall allow for the management of services on all connected NGCC Servers including:

  [R-168]   IMC shall allow for the management of media subsystems

  [R-169]   IMC shall allow for the management of Text To Speech subsystem.

  [R-170]   IMC shall allow for the management of Web Services connection

  [R-171]   IMC shall allow for the management of configured users.

  [R-172]   IMC shall be a thin client application that can be run remotely.

3.15   TDM Voice Channel

[R-173]   The system shall support TDM voice channel via an adapter interface. This channel shall support the following interfaces:

  [R-174]   Accept media session command

  [R-175]   End media session command

  [R-176]   Hold End media session command

  [R-177]   Transfer media session command

  [R-178]   Conference media session command

3.16   Instant Messaging Channel

  [R-179]   TBD

3.17   Error Logging

This section will cover the errors for both the desktop agent software, and the server. It is recommended that instead of writing much of this functionality that we enter the information as follows:

3.17.1 Agent Desktop

[R-180]   Errors shall be entered into a log cache file that is stored on the local machine's disk. The errors are cached in memory, and then written to disk at specified intervals to not impact performance. Having this file available shall help 5by5 engineers diagnose any problems with a customer using the agent.[2] Upon a system crash or serious malfunction, the cache file will be uploaded to 5by5 Networks for diagnostics by engineering.

[R-181]   Severe error information shall have the software connect to an error recording server hosted by 5by5 Networks. The information can be sent on a dedicated logging thread without the user being involved. These log files shall automatically be loaded and monitored by 5by5 engineering staff for abnormal conditions in the field. This shall enable us to take a proactive stance on addressing potential issues our customers might experience.

[R-182]   The agent shall be asked for permission to upload the diagnostics cache file to 5by5 Networks.

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[2] There is an entire spectrum of public domain classes that provide this functionality in C++ or Java.

3.17.2 Server Components

[R-183]   Errors shall follow the same approach as the agent, but serious errors shall be entered into the hosts' Windows Event log. This shall then permit any Outsourcers' monitoring agents such as SiteScope[3] or Tivoli to detect a serious issue, and then notify the appropriate IT resource. The IT resource can then have the complete log file available to send to 5by5 engineering or work on self-diagnosing the program themselves.

3.17.3 Extra Credit

[R-184]   UI Logging of certain features. The UI logger will record which features are being used and how often the user is actively using them, and then the aggregate count shall be uploaded to a 5by5 Networks database. This data shall help us determine which features are being used, etc. Features not being used might require some additional promotion or training for our customer, or possibly removal. This log can also be compared to our support calls, helping us determine if certain features require more explanation or simplification.

3.18 System Health Monitoring

[R-185]   The system can be monitored with third party tools such as SiteScope or Tivoli. This product shall provide an intelligent agent running on the same machine as our software, and monitor the Event Log, CPU usage, disk performance and storage, memory usage, and monitor to make sure our process is running. Upon error SiteScope/Tivoli can be configured to page the IT resource, email them, or whatever type of notification the customer would desire. It is recommended that we work with a product such as SiteScope or Tivoli rather than develop this capability internally.

[R-186]   A run book shall be written and provided to our customers. This book shall provide diagnostic steps for the IT staff to follow should an error be detected. The run book shall cover issues such as recovery, restarting, reconfiguring, who to contact at 5by5 Networks for further support, etc.

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[3] http://www-svca.mercuryinteractive.com/products/sitescope/ provides a list of the product's functionality. This product is widely used by companies globally, and is fairly moderately priced.

3.19 Web-based Customer Support

3.19.1 Customer side

[R-187] The enterprises shall be able to link to web-based support seamlessly, through the button / link on their intranet.

[R-188] The customers who surf on the corporate web sites should be able to get connected to a live agent with press of a button / link, as set up by the enterprise.

[R-189] The customers should be able to interact with the agent using simple browser based application. There shall not be any client downloads required.

[R-190] When asking for help on the web, the customer shall have an option to identify himself / herself.

[R-191] The customer shall have the ability to request for voice call back while preserving their position in the queue.

3.19.2 Routing Capabilities

[R-192] When the customer requests help, the request shall be queued to UQE similar to other requests

[R-193] UQE to allocate this request to suitable agents, based on the routing rules set up by the administrator.

[R-194] Once the call is routed, the agent and customers may chat as normal

[R-195] The system will have the ability to monitor the duration of the chat, and ability to log the conversation.

3.19.3 Agent Capabilities

[R-196] Accepting, measuring the duration of a chat session, and closing the chat session shall be similar to the Voice call handling.

[R-197] Agent shall be able to chat with many customers at the same time based on the preferences set.

[R-198] Agent shall be able to converse with the online customer using the same desktop.

[R-199] Agent shall be able to access the customer's surfing history. The list of pages surfed by the customer during the current session, during the previous session.

[R-200] Agent shall be able to co-browse with the customer, i.e. view the same pages simultaneously as the customer is seeing them

[R-201] Agent shall have the ability to share the documents with the customer

[R-202] Agent shall have the ability to make a simultaneous voice call with the customer

[R-203] Agent shall be able to request the UQE to transfer the chat to another agent. Agent should be able to request UQE to conference in another agent with a specific skills

[R-204] Agent shall be able to request the supervisor to join the chat, in a conference mode.

[R-205] When the chat session is transferred, or another person is conferenced in on the chat session, the new person should be able to see the complete history of the current session.

[R-206] The agent shall be able to see the history of the customer contacts with the contact center, using all of the available channels, in chronological order.

3.19.4 Supervisor capabilities

[R-207] The supervisor shall be able to view all the chat sessions going on in his/her group.

[R-208] The supervisor shall be able to eve's drop on any of the ongoing chat sessions and monitor the chat.

[R-209] The system shall measure the chat session events similar to the voice call events

[R-210] The system shall have the ability to log the transcription of the chat session

[R-211] The system shall have the ability to send the chat session log as Email attachment to the customer

[R-212] The system shall have the ability to access the archived log subsequently for historical or reporting reasons

3.20 Web Services

3.21 Bandwidth Manager

4 Appendix

4.1 View of Outsourced Call Centers

The following diagram details visually the typical customer that 5by5 Networks is targeting: namely, the large Call Center that is being outsourced from the US to an international company such as Convergys or Spectramind. In the example, customers contact the center via the regular telephone, an IP phone, or through web chat from their computer. An AT&T customer call would connect to the AT&T Enterprise, at which point the call is then routed to the Outsourcer, Convergys. Convergys then routes the call to the appropriate agent via SBR, along with other factors such as wait time, load, etc. There is also a data connection between the CCO and the Enterprise (AT&T) that passes customer information via a VPN (virtual private network). This enables the agent to take the customers call, and have all their information available in front of them immediately.
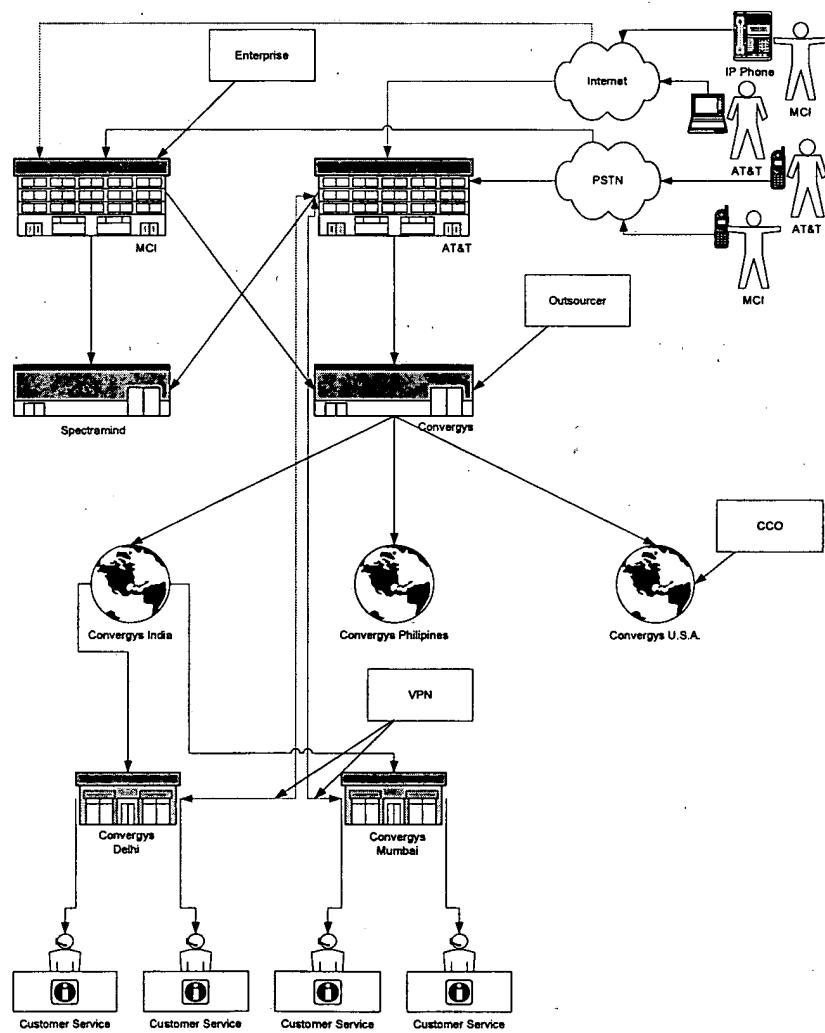
4.2 Location Matrix

This is a list of the required components and their physical location assumptions:

	Base System	PBX Voice Channel	SIP Phone Voice Channel	Web Chat
Customer		Phone	SIP Phone	Web Browser
CCO	RTC Server	PBX	RTC FE Server	Presence Adapter
	SharePoint Server	NetMerge		
	Reporting Server	Call Manager	AS5350	
		AS5350		
Outsourcer	Reporting Server			
Enterprise	Reporting Server	PBX		Channel Adapter
	Channel Adapter IVR	Call Manager		
	RTC Server	NetMerge		
	UQE	AS5350	AS5350	
	SharePoint Server			
	Enterprise Application			